Effect of Haemolytic Interference on Lactate Dehydrogenase Activity in Pooled Normal Serum

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Measurement of serum Lactate Dehydrogenase (LDH) activity plays a pivotal part in the diagnosis and treatment of liver disease, myocardial infarction, anaemia, muscle trauma, and cancers. Meanwhile, haemolysis is one of the most important interfering substances in LDH measurement. This study was aimed to evaluate the haemolytic interference on LDH activity in pooled serum samples. Twenty different haemoglobin concentrations (0.05 to 5g/dL) were prepared from a haemolysate. Non-haemolysed serum samples were used to prepare pooled serum which was aliquoted and treated separately with different haemoglobin concentrations. The LDH activity and the haemoglobin concentrations were measured by French Society of Clinical Biology (SFBC) modified kinetic method and cyanmethaemoglobin method respectively. All the analyses were performed in triplicates. Baseline haemoglobin concentration was below the limit of quantification. Baseline LDH activity of pooled serum was 202.38 IU/L. There was a strong positive correlation between LDH activity and haemoglobin concentrations (Pearson correlation coefficient (r) = 0.980, $p<0.001$, $R^2 = 0.868$). Statistically significant mean differences of LDH activities were found between all twenty different haemoglobin concentrations and baseline LDH activity ($p<0.001$), more importantly, even at very low haemoglobin concentration (0.005g/dL). Prediction equation for corrected LDH activity: Corrected LDH activity = (2183.7 * Haemoglobin concentration) +Baseline LDH activity ($R^2=0.868$). There was a statistically significant strong positive correlation between serum LDH activity and haemoglobin concentration ($r=0.990$, $p<0.001$, $R^2=0.868$). Therefore, LDH activity should be reported upon correction using haemoglobin concentration. However, further studies including different baseline LDH activities and larger samples are needed to validate the findings of the present study.

Keywords: *correction factor, haemolysis, Interference, LDH*